

In the Claims

Please amend claims 1 and 10 as follows. Applicants reserve the right to pursue the original subject matter in a continuing application.

1. **(Currently Amended)** A hydraulic braking system for supplying a braking output to a vehicle having at least one wheel, the braking system comprising:
 - (a) a primary valve assembly configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input; and
 - (b) a secondary valve assembly integral with the primary valve assembly, the secondary valve assembly being configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly; and
 - (ii) an actuator for engaging and actuating the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve assists the braking output produced by the primary valve assembly;
 - (c) wherein the braking output of the system includes a first braking output and a second assisted braking output, and wherein the system is configured to provide each of the first braking output and the second assisted braking output at the same manually controlled input.
2. (Cancelled)
3. **(Previously Presented)** The hydraulic braking system of claim 20, wherein:
 - (a) the second spool valve further being constructed and arranged to modulate between the secondary valve assembly second and intermediate positions

such that the secondary valve assembly decreases the braking output produced by the primary valve assembly.

4. (Original) The hydraulic braking system of claim 1, wherein:
 - (a) the actuator is a solenoid actuator having a coil and an armature for engaging and actuating the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve modulates the braking output produced by the primary valve assembly.
5. (Original) The hydraulic braking system of claim 1, wherein:
 - (a) the programmable electronic controller is configured to receive input from one or more vehicle control systems such that the secondary valve assembly modulates the braking output produced by the primary valve assembly according to preset values.
6. (Original) The hydraulic braking system of claim 5, wherein:
 - (a) the vehicle control system is an anti-lock brake system.
7. (Original) The hydraulic braking system of claim 5, wherein:
 - (a) the vehicle control system is a traction control brake system.
8. (Original) The hydraulic braking system of claim 1, wherein:
 - (a) the programmable electronic controller is configured to receive input from a serial control device such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.
9. (Original) The hydraulic braking system of claim 1, wherein:
 - (a) the programmable electronic controller is configured to receive input from one or more electronic sensors such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.

10. **(Currently Amended)** An electronically enhanced brake valve for a vehicle having at least one wheel, the brake valve comprising:
- (a) a primary valve assembly including a primary valve housing, the primary valve housing defining a primary pressure chamber and a housing outport for communicating a braking output, the primary valve assembly being configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input; and
 - (b) a secondary valve assembly configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly; and
 - (ii) an actuator configured to engage and actuate the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve increases the braking output, the increased braking output being provided within the primary pressure chamber and communicated through the housing outport of the primary valve assembly;
 - (c) wherein the braking output of the system includes a first braking output and a second braking output, and wherein the system is configured to provide each of the first braking output and the second braking output at the same manually controlled input.

11. (Cancelled)
12. (Previously Presented) The brake valve of claim 21, wherein:

- (a) the second spool valve further being constructed and arranged to modulate between the secondary valve assembly second and intermediate positions such that the secondary valve assembly decreases the braking output produced by the primary valve assembly.

13. (Previously Presented) The brake valve of claim 25, wherein:

(a) the programmable electronic controller is configured to receive input from one or more electronic sensors such that the secondary valve assembly modulates the braking output produced by the primary valve assembly according to preset values.

14. (Previously Presented) The brake valve of claim 25, wherein:

(a) the programmable electronic controller is configured to receive input from one or more vehicle control systems such that the secondary valve assembly modulates the braking output produced by the primary valve assembly according to preset values.

15. (Original) The brake valve of claim 14, wherein:

(a) the vehicle control system is an anti-lock brake system.

16. (Original) The brake valve of claim 14, wherein:

(a) the vehicle control system is a traction control brake system.

17. (Previously Presented) The brake valve of claim 25, wherein:

(a) the programmable electronic controller is configured to receive input from a serial control device such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.

18. (Previously Presented) The brake valve of claim 25, wherein:

(a) the programmable electronic controller is configured to receive input from one or more electronic sensors such that the secondary valve assembly modulates the braking output produced by the primary valve assembly in real-time.

19. (Previously Presented) The brake valve of claim 21, wherein:
- (a) the first pressure source is system pressure; and
 - (b) the second pressure source is ambient pressure.
20. (Previously Presented) A hydraulic braking system for supplying a braking output to a vehicle having at least one wheel, the braking system comprising:
- (a) a primary valve assembly configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input, the first spool valve being positionable between a first position, a second position, and intermediate positions between the first and second positions;
 - (1) the first position providing fluid communication between at least one of the wheels and a first pressure source;
 - (2) the second position providing fluid communication between at least one of the wheels and a second pressure source; and
 - (3) the intermediate positions restricting fluid communication between the vehicle wheels and the first and second pressure sources; and
 - (b) a secondary valve assembly integral with the primary valve assembly, the secondary valve assembly being configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly, the second spool valve being positionable between a first position, a second position, and intermediate positions between the first and second positions;
 - (1) the first position providing fluid communication between the primary valve assembly and the first pressure source;

- (2) the second position providing fluid communication between the primary valve assembly and the second pressure source; and
 - (3) the intermediate position restricting fluid communication between the vehicle wheels and the first and second pressure sources; and
- (ii) an actuator for engaging and actuating the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve modulates between the secondary valve assembly first and intermediate positions such that the secondary valve assembly pilot assists the primary valve assembly to intensify the braking output provided by the primary valve assembly when the actuator urges the second spool valve to the second position.
21. (Previously Presented) An electronically enhanced brake valve for controlling a braking output to a vehicle having at least one wheel, the brake valve comprising:
- (a) a primary valve assembly configured to receive a manually controlled input that varies the braking output, the primary valve assembly including:
 - (i) a first spool valve configured to vary the braking output according to the manually controlled input, the first spool valve being positionable between a first position, a second position, and an intermediate position between the first and second positions;
 - (1) the first position providing fluid communication between at least one of the wheels and a first pressure source;
 - (2) the second position providing fluid communication between at least one of the wheels and a second pressure source; and
 - (3) the intermediate position restricting fluid communication between the vehicle wheels and the first and second pressure sources; and

- (b) a secondary valve assembly integral with the primary valve assembly, the secondary valve assembly being configured to receive input signals from a programmable electronic controller, the secondary valve assembly including:
 - (i) a second spool valve configured to operate with the primary valve assembly, the second spool valve is positionable between a first position, a second position, and an intermediate position between the first and second positions;
 - (1) the first position providing fluid communication between the primary valve assembly and the first pressure source;
 - (2) the second position providing fluid communication between the primary valve assembly and the second pressure source; and
 - (3) the intermediate position restricting fluid communication between the vehicle wheels and the first and second pressure sources; and
 - (ii) a solenoid actuator having a coil and an armature for engaging and actuating the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve modulates between the secondary valve assembly first and intermediate positions such that the secondary valve assembly pilot assists the primary valve assembly to intensify the braking output provided by the primary valve assembly when the armature urges the second spool valve to the second position.

- 22. (Cancelled)
- 23. (Previously Presented) The brake valve of claim 10, wherein:
 - (a) the secondary valve assembly is integral with the primary valve assembly.

24. (Previously Presented) The hydraulic braking system of claim 1, furthering including:
- (a) a brake valve body including at least a first fluid chamber and a second fluid chamber, wherein the first spool valve of the primary valve partially defines the first fluid chamber, and the second spool valve of the secondary valve assembly partially defines the second fluid chamber.
25. (Previously Presented) The brake valve of claim 10, wherein:
- (a) the actuator configured to engage and actuate the second spool valve to increase the braking output produced by the primary valve assembly is also configured to engage and actuate the second spool valve according to the input signals received from the programmable electronic controller such that the second spool valve decreases the braking output produced by the primary valve assembly.
26. (Previously Presented) The brake valve of claim 10, wherein:
- (a) the actuator includes a solenoid actuator having a coil and an armature for engaging and actuating the second spool valve to increase the braking output produced by the primary valve assembly.
27. (Previously Presented) A braking system for providing a range of braking outputs, the braking system comprising:
- (a) a pedal rotatable in a range of operating positions, the range including at least a first operating position;
 - (b) a primary valve assembly operating upon rotation of the pedal, the primary valve assembly having a fluid pressure chamber and a spring arrangement, the spring arrangement being arranged to compress when the pedal is rotated and transmit a force from the fluid pressure chamber to the pedal when the fluid pressure chamber is pressurized, the primary valve assembly providing:
 - (i) a first braking output and a first pedal feedback force, the first pedal feedback force corresponding to compression of the spring

- arrangement by the pedal when the pedal is positioned in the first operating position; and
- (c) a secondary valve assembly in fluid communication with the fluid pressure chamber of the primary valve assembly, the secondary valve assembly being configured to operate with the primary valve assembly to assist the braking output of the braking system, the secondary valve assembly operating upon a signal from an electronic controller to pressurize the fluid pressure chamber of the primary valve assembly, the secondary valve assembly providing:
- (i) a second braking output and a second pedal feedback force, the second pedal feedback force corresponding to:
- 1) compression of the spring arrangement of the primary valve by the pedal when the pedal is in the first operating position; and
- 2) force derived from the pressurized fluid pressure chamber of the primary valve assembly provided when the electronic controller signals the secondary valve to operate.
28. (Previously Presented) The braking system of claim 27, wherein:
- (a) the spring arrangement is positioned adjacent to a piston, the piston partially defining the fluid pressure chamber, the spring arrangement being configured to provide the force derived from the pressurized fluid pressure chamber by movement of the piston and compression of the portion of the spring arrangement when the fluid pressure chamber is pressurized.
29. (Previously Presented) A braking system comprising:
- (a) an actuator mechanism configured to provide a manual control input, the manual control input including a range of input values;
- (b) a primary valve assembly interconnected to the actuator mechanism, the primary valve assembly being configured to operate upon receipt of the manual control input;

- (c) a secondary valve assembly arranged in fluid communication with the primary valve assembly, the secondary valve assembly being configured to operate upon receipt of an electronic input from a controller;
 - (d) wherein the braking system provides:
 - (i) a first braking output and a corresponding first force that acts upon the actuation mechanism when the manual control input is operated at a first input value of the range of input values; and
 - (ii) a second braking output and a corresponding second force that acts upon the actuation mechanism while the manual control input is operated at the first input value of the range of input values.
30. (Previously Presented) The braking system of claim 29, wherein:
- (a) the first braking output and corresponding first force are provided when only the primary valve is operated.
31. (Previously Presented) The braking system of claim 29, wherein:
- (a) the second braking output and corresponding second force are provided when the secondary valve assists the braking output provided by the primary valve.
32. (Previously Presented) The braking system of claim 29, wherein:
- (a) the manual control input corresponds to a position of an actuator mechanism.
33. (Previously Presented) The braking system of claim 32, wherein:
- (a) the manual control input corresponds to a rotational position of a pedal-operated actuator mechanism.
34. (Previously Presented) A braking system providing a braking output, the braking system comprising:
- (a) a pedal positionable in a range of operating positions;

- (b) a primary valve assembly interconnected to the pedal, the primary valve assembly being configured to provide a pedal feedback force when the pedal is positioned at a first operating position of the range of operating positions;
 - (c) a secondary valve configured to operate with the primary valve assembly;
 - (d) wherein the system defines an operating ratio of pedal feedback force to operating position, the secondary valve being configured to increase the operating ratio while the pedal remains in the first operating position.
35. (Previously Presented) The braking system of claim 34, wherein:
- (a) operation of only the primary valve assembly provides an initial operating ratio, and operation of the secondary valve in conjunction with the primary valve assembly increases the operating ratio from the initial operating ratio to a second operating ratio.
36. (Previously Presented) The braking system of claim 34, wherein:
- (a) the operating ratio corresponds to the braking output of the system such that increasing the operating ratio of the system while the pedal remains in the first operating position also increases the braking output of the system.
37. (Previously Presented) The braking system of claim 27, wherein:
- (a) the fluid pressure chamber of the primary valve assembly is pressurized to provide the first braking output independent of operation of the secondary valve assembly.
38. (Previously Presented) The braking system of claim 27, wherein:
- (a) the primary valve assembly is configured to provide the first braking output without operation of the secondary valve assembly.
39. (Previously Presented) The braking system of claim 29, wherein:

- (a) the primary valve assembly operates upon receipt of the manual control input without operation of the secondary valve assembly.
40. (Previously Presented) The braking system of claim 34, wherein:
- (a) the primary valve assembly is configured to provide a braking output without operation of the secondary valve.